

What is Claimed is:

1. A Light Emitting Diode (LED) comprising:
a substrate having first and second opposing faces and a sidewall therebetween
that extends at an oblique angle from the second face towards the first face; and
5 a conformal layer comprising phosphor on the sidewall that extends at an
oblique angle from the second face towards the first face.

2. An LED according to Claim 1 wherein the oblique angle is an obtuse
angle.

- 10 3. An LED according to Claim 2 wherein the obtuse angle is about 120°.

4. An LED according to Claim 1 wherein the sidewall extends at an
oblique angle from the second face to adjacent the first face.

- 15 5. An LED according to Claim 1 wherein the sidewall extends at an
oblique angle from the second face to the first face.

6. An LED according to Claim 1 wherein the sidewall is a planar
20 sidewall.

7. An LED according to Claim 1 wherein the substrate is a semiconductor
substrate.

- 25 8. An LED according to Claim 1 further comprising a diode region on the
first face.

9. An LED according to Claim 8 wherein the substrate comprises silicon
carbide and wherein the diode region comprises gallium nitride.

- 30 10. An LED according to Claim 1 wherein the sidewall also extends
orthogonal to the first face from the first face towards the second face.

11. An LED according to Claim 8 wherein the substrate and diode region are a total of about 175 μ m thick.
12. An LED according to Claim 11 wherein the sidewall extends at an oblique angle of about 120 $^{\circ}$ from the second face for about 173 μ m to adjacent the first face.
13. An LED according to Claim 1 wherein the conformal layer comprising phosphor is between about 2 μ m and about 100 μ m thick.
14. An LED according to Claim 1 wherein the conformal layer comprising phosphor extends along the entire sidewall that extends at an oblique angle from the second face towards the first face.
15. An LED according to Claim 1 wherein the conformal layer comprising phosphor also extends on the second face.
16. An LED according to Claim 1 further comprising a reflective contact on the second face.
17. An LED according to Claim 16 wherein the reflective contact extends on the entire second face.
18. An LED according to Claim 16 wherein the conformal layer comprising phosphor extends on the reflective contact opposite the second face.
19. An LED according to Claim 18 wherein the conformal layer comprising phosphor is thinner on the reflective contact than on the oblique sidewall.
20. A Light Emitting Diode (LED) comprising:
a substrate having first and second opposing faces and a planar sidewall therebetween including a first portion that extends at an obtuse angle from the second face to adjacent the first face and a second portion that extends orthogonal to the first face from the first face towards the second face;

a diode region on the first face;
a reflective contact on the second face; and
a conformal layer comprising phosphor on the first portion of the sidewall that
extends at an oblique angle from the second face towards the first face.

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21. An LED according to Claim 20 wherein the substrate comprises silicon carbide and wherein the diode region comprises gallium nitride.

22. An LED according to Claim 20 wherein the substrate and diode region
10 are a total of about 175 μm thick, wherein the first portion of the sidewall extends at
an obtuse angle of about 120° from the second face for about 173 μm to adjacent the
first face and wherein the conformal layer comprising phosphor is between about 2 μm
and about 100 μm thick.

15 23. An LED according to Claim 20 wherein the conformal layer
comprising phosphor extends on the entire first portion of the sidewall.

24. A method of fabricating Light Emitting Diodes (LED) comprising:
conformally coating a sidewall, which extends at an oblique angle from a
20 second face of a substrate towards a first face of the substrate, with a layer comprising
phosphor.

25. A method according to Claim 24 wherein conformally coating further
comprises conformally coating the second face with the layer comprising phosphor.